WHAT IS CLAIMED IS:

1, A capacitive sensor system for controlling operation of a device, the system comprising:

sense electrodes for enabling establishment of an electric field for intercepting motion of a proximate object; and

an electronic circuit for providing a control output signal in response to a rate of change in capacitance of the sense electrodes due to motion of the proximate object within the field without intermediate electronic differentiation of signals related to a change in capacitance.

2. The system according to claim 1 wherein said electronic circuit comprises:

a phase locked loop, including a voltage controlled oscillator (VCO), connected to the sense electrodes, for providing an operating frequency to the sense electrodes;

a fixed frequency reference oscillator for providing a fixed frequency reference;

a phase/frequency comparator for comparing a VCO frequency with the fixed reference frequency;

a phase delay circuit for changing a phase difference between the VCO frequency and the fixed reference oscillator frequency when the loop is phase locked;

a loop filter for integrating a phase error signal from the phase/frequency comparator in order to define a dynamic response of the loop; and

a phase sensitive trigger circuit for providing a control output signal in response to change in a phase

difference between the fixed reference frequency and the operating frequency.

3. The system according to claim 2 wherein the phase delay circuit is operative for causing the VCO frequency to run ahead of the fixed reference frequency in order that a positive rate of change in capacitance controls operation of the device.

4 The system according to claim 2 wherein the phase delay circuit is operative for causing the VCO frequency to lag behind the fixed reference frequency in order that a negative rate of change in capacitance controls operation of the device.

5. A capacitive sensor system for controlling operation of a device in response to a rate of change in capacitance due to motion of a proximate object, the system comprising:

at least two sense electrodes disposed in a spaced apart relationship for enabling establishment of an electric field between the sense electrodes, said electric field extending outwardly and between the sense electrodes;

a phase locked loop, including a voltage controlled oscillator (VCO), connected to the sense electrodes, for providing an operating frequency to the sense electrodes;

a fixed frequency reference oscillator for providing a fixed frequency reference;

a phase/frequency comparator for comparing a VCO frequency with the fixed reference frequency;

a phase delay circuit for changing a phase difference between the VCO frequency and the fixed reference oscillator frequency when the loop is phase locked;

a loop filter for integrating a phase error signal from the phase/frequency comparator in order to define a dynamic response of the loop; and

a phase sensitive trigger circuit for providing a control output signal in response to change in a phase difference between the fixed reference frequency and the operating frequency.

6, The system according to claim 5 wherein the phase delay circuit is operative for causing the VCO frequency to run ahead of the fixed reference frequency in order that a positive rate of change in capacitance controls operation of the device.

7. The system according to claim 5 wherein the phase delay circuit is operative for causing the VCO frequency to lag behind the fixed reference frequency in order that a negative rate of change in capacitance controls operation of the device.

8. The system according to any one of claims 5, 6, or 7 wherein the voltage controlled oscillator provides an operating frequency to the sense electrodes sufficiently high to ensure object is detected by the sense electrodes as a dielectric material.

9. The system according to claim 8 wherein the voltage controlled oscillator provides an operating frequency of less

than about 1 MHz for operating a soap dispenser by motion of a human hand.

10. The system according to claim 8 wherein the voltage controlled oscillator provides an operating frequency greater than about 10 MHz for operating a faucet by motion of a human hand.

11. The system according to claim 5 wherein the electrodes are disposed in a planar relationship.

12. The system according to claim 11 further comprising a grounded shield electrode disposed in a spaced apart and surrounding relationship with the sense electrodes, the shield electrode being in a plane generally perpendicular with the sensor electrodes and extending away from the established electrode field.

13. The system according to claim 11 further comprising a grounded shield electrode disposed in a plane generally parallel to the sense electrodes.

14. The system according to claim 5 wherein said trigger circuit comprises a D-Flop circuit.

15. A capacitive sensor system for controlling operation of a device in response to a rate of change in capacitance due to motion of a proximate object, the system comprising:

at least two sense electrodes disposed in a spaced apart relationship for enabling establishment of an electric

field between the sense electrodes, said electric field extending outwardly and between the sense electrodes;

a phase locked loop, including a voltage controlled oscillator (VCO), connected to the sense electrodes, for providing an operating frequency to the sense electrodes;

a fixed frequency reference oscillator for providing a fixed frequency reference;

a loop filter for integrating a phase error signal from the phase/frequency comparator in order to define a dynamic response of the loop; and

a phase sensitive trigger circuit for providing a control output signal in response to a change in a phase difference between the fixed reference frequency and the operation frequency, the trigger circuit including a voltage comparator, having one side connected to the VCO, and a long time constant loop filter connected between the phase/frequency comparator and the voltage comparator.

16. A capacitive sensor system for controlling operation of a device in response to a rate of change in capacitance due to motion of a proximate object, the system comprising:

at least two sense electrodes disposed in a spaced apart relationship for enabling the establishment of an electric field between the sense electrodes;

a phase locked loop, including a voltage controlled oscillator (VCO), connected to the sense electrodes, for providing an operating frequency to the sense electrodes;

a fixed frequency reference oscillator for providing a fixed frequency reference;

a phase frequency comparator for comparing a VCO frequency with the fixed reference frequency;

phase delay circuit connected between said phase/frequency comparator and said voltage controlled oscillator for causing said voltage controlled oscillator to run ahead of the reference oscillator; and

a trigger circuit for providing a control output in response to a change in phase shift between said fixed frequency and said operating frequency.

17. The system according to claim 16 wherein voltage controlled oscillator provides an operating frequency to the sense electrodes sufficiently high to ensure the object is detected by the same electrodes as a dielectric material.

18. The system according to claim 17 wherein the voltage controlled oscillator provides an operating frequency of less than about 1 MHz for operating a soap dispenser by motion of a human hand.

19. The system according to claim 17 wherein the voltage controlled oscillator provides an operating frequency greater than about 10 MHz for operating a faucet by motion of a human hand.

20. The system according to claim 19 further comprising a shield electrode disposed in a spaced apart and surrounding relationship with the sense electrodes.

21. The system according to claim 16 wherein said trigger circuit comprises a D-Flop circuit.

22. The system according to claim 5, 15 or 16 further comprises an adaptive feedback path connected between the

phase/frequency comparator and the VCO for maintaining a phase difference between the fixed reference frequency and the VCO operating frequency between +90 and -90 degrees.

23. The system according to claim 5, 15 or 16 further comprising an RF attenuating filter interconnected between each sense electrode and the VCO.

24. The system according to claim 5, 15 or 16 further comprises a frequency divider interconnecting the VCO and the phase/frequency comparator.